SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY

Cognizant Hackathon 2025

BATCH-1

USE CASE NO - 3

USE CASE - PREDICTING MEDICAL EQUIPMENT FAILURE

OUR MENTORS

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OUR TEAM

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> Team Project Work Report

Work Split-up (Teammate-wise Progress)

Akalya G (TM_1) – Report Generation Module

- Day 1: Explored Device.csv, Manufacturer.csv, and Event.csv datasets.
- Day 2: Planning & requirement analysis for the report module.
- Day 3: Developed initial report in JS + CSS with dual headers.
- Day 4: Integrated routing to navigate between report pages.
- Day 5: Implemented PDF export & download notifications in footer.
- Day 6: Designed layout for the Reports Page.
- Day 7: Built report modal showing device, event, manufacturer info; styled for proper format; tested PDF.
- Day 8: Added failure history & recall events page with timeline; restructured modal for multi-page PDF export.
- Day 9: Improved failure history with timeline & table; refined recall placeholder; tested across multiple devices.
- Day 10: Completed report module.

burnda PV (TM_2) - Documentation & Manufacturer Dashboard

- **Day 1:** Prepared documentation and GitHub branching strategy.
- Day 2: Worked on documentation and GitHub updates; shared UI planning ideas for TM4.
- Day 3: Updated documentation and GitHub; contributed UI design ideas.
- Day 4: Continued GitHub updates and documentation.
- Day 5: Documentation and GitHub updates.
- Day 6: Documentation and GitHub updates.
- Day 7: Planned and analyzed ML model results rendering in the frontend (React.js).
- **Day 8:** Initial development of Manufacturer Dashboard (dashboard overview, manufacturer analysis, major failures, visualization reports); updated documentation.
- Day 9: Extended Manufacturer Dashboard (dashboard overview, data uploads, device analysis, failure alerts, manufacturers, reports, settings, sidebar, navbar); updated documentation.
- **Day 10:** Completed and uploaded Manufacturer Dashboard to GitHub; finalized and updated documentation.

□ Dharanidhar S (TM_3) – System Architecture & Authentication

- **Day 1:** Drafted initial System Architecture Diagram.
- Day 2: Refined System Architecture Diagram.
- Day 3: Completed System Architecture Diagram.
- Day 4: Developed simple UI for TM1's routing; performed JSON integration; updated architecture diagram.
- Day 5: Continued UI + JSON integration; architecture finalized.
- Day 6: Implemented UI responsiveness with TM1.
- Day 7: Developed About Page.
- Day 8: Developed Login Page.
- Day 9: Integrated Firebase Authentication (Login & Signup).
- Day 10: Completed assigned work.

Logesh S (TM 4) – UI Development + Snowflake Ingestion + Flask Backend

- Day 1: Preprocessed Events dataset (cleaning, regex extraction, normalization, deduplication) with TM6.
- Day 2: Developed React UI modules (About, Login, Dashboard, Device Analysis).
- Day 3: Built UI modules (Report, Data Upload, Manufacturer, Settings); Snowflake planning.
- Day 4: Injected Device.csv, Company.csv, Events.csv into Snowflake; cleaned and standardized columns.
- Day 5: Built Flask backend for Snowflake; created endpoints; integrated UI; unit & integration testing.
- Day 6: Integrated API endpoints (Device search, samples, overview metrics); performed UAT.
- Day 7: Connected UI + Flask + Snowflake.
- Day 8: Model integration with UI + Snowflake + Flask.
- Day 9: Added Alerts to model integration with UI + Snowflake + Flask.
- Day 10: Integrated Manufacturer Dashboard with Flask & UI.

Logichandran J (TM_5) – Alert System (Novu)

- **Day 1:** Analyzed datasets & project goals; identified inconsistencies.
- Day 2: Preprocessed datasets for alert system.
- Day 3: Designed alert system & notification flow.
- Day 4: Analyzed notification flow; started backend design.
- **Day 5:** Developed UI for alert system.
- Day 6: Built backend for alert triggers.
- **Day 7:** Analyzed Novu platform.
- Day 8: Integrated frontend + backend + Novu.
- Day 9: Tested alert system; created test case document (unit testing for email alerts).
- Day 10: Completed alert system.

Nick Anto Roy A (TM_6) – Machine Learning Models

- **Day 1:** With TM4 → Event preprocessing (cleaning, regex, deduplication).
- Day 2: Preprocessed Manufacturer & Device CSV datasets.
- Day 3: Started ML model development; assisted in preprocessing.
- Day 4: Developed Class Prediction model.
- Day 5: Built Class Risk Prediction model (Risk %, Probability Distribution); connected via SnowSQL.
- Day 6: Trained new algorithms for time-based predictions.
- Day 7: Developed Logistic Regression model.
- Day 8: Developed Decision Tree model.
- Day 9: Developed Random Forest model.

• Day 10: Evaluated models; finalized best model; prepared documentation with team.

Day	TM1	TM2	тмз	TM4	TM5	TM6
1	Explored CSV datasets	Documentation + GitHub branching	Drafted architecture	Event preprocessing (with TM6)	Dataset analysis	Event preprocessing (with TM4)
2	Planning & requirements	Docs + GitHub + UI planning	Refined architecture	UI (About, Login, Dashboard, Device Analysis)	Dataset preprocessing	Preprocessed manufacturer & device data
3	Initial report (JS + CSS)	Docs + GitHub + UI contribution	Completed architecture	UI (Report, Upload, Manufacturer, Settings)	Alert system design	ML model dev started
4	Routing integration	Docs + GitHub	UI + JSON integration	Snowflake data injection	Notification flow analysis	Class Prediction model
5	PDF export + Notifications	Docs + GitHub	Continued UI + JSON integration	Flask backend + API endpoints	Alert UI development	Class Risk model
6	Report page layout	Docs + GitHub	Responsive UI	API integration + snowflake	Alert backend dev	Time-based prediction
7	Report modal + styling	ML results planning + Docs	About Page	UI + Flask + Snowflake integration	Novu platform analysis	Logistic Regression
8	Failure history + recall events + timeline	Manufacturer dashboard (initial)+ Docs	Login Page	Model integration with UI + flask	Novu + frontend + backend integration	Decision Tree
9	Timeline + table; recall placeholder styled	Manufacturer dashboard (next updates) + Docs	Firebase Auth	Model + Alerts integration	Testing + test case docs	Random Forest
10	Completed report module	Completed Manufacturer Dashboard + Docs	Completed work	Integrated Manufacturer Dashboard + Testing Docs	Completed alert system	Model evaluation + finalization + Model Docs

GitHub Collaboration Updates

- Brinda PV : README updates, manufacturer UI updates, documentation updates.
- Logesh S: UI updates, integration commits, backend commits, snowflake commits.
- Nick Anto Roy A: Model development updates, architecture commits snowflake commits.